PATENT PENDING

FIG. 1
(PRIOR ART)

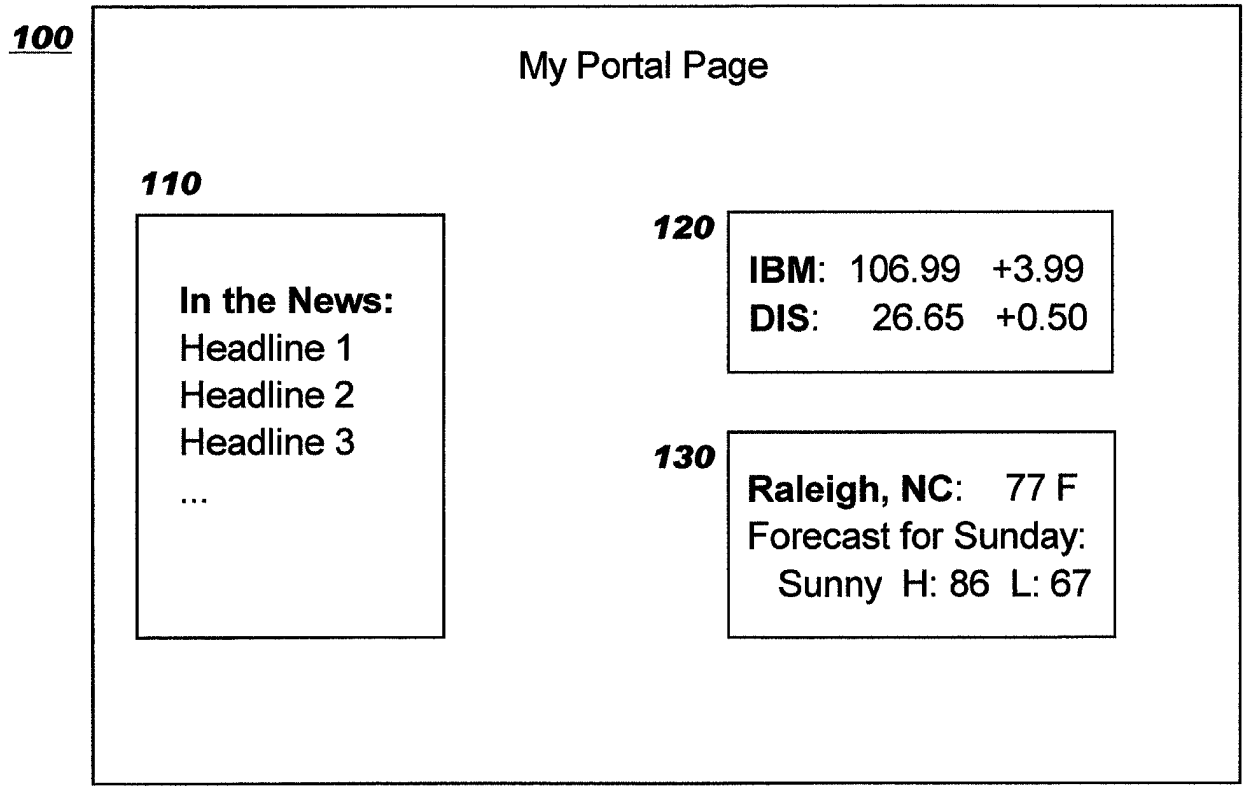


FIG. 2A

```
205 HTTP/1.1 200 OK
210 Content-Type: text/html
215 Refresh: 12
    ... content follows ...
```

FIG. 2B

```
220 <META HTTP-EQUIV="Refresh" CONTENT="12" />
```

FIG. 2C

```
                230                                   240
                Content-type: multipart/x-mixed-replace;boundary=PortalPageContent
250
                --PortalPageContent
                Content-type:  text/html

                ... initial version of HTML page content ...

                --PortalPageContent
260             Content-type:  text/html

                ... second version of HTML page content ...

                --PortalPageContent
                Content-type:  text/html
270
                ... third version of HTML page content ...

                --PortalPageContent--
```

FIG. 3A

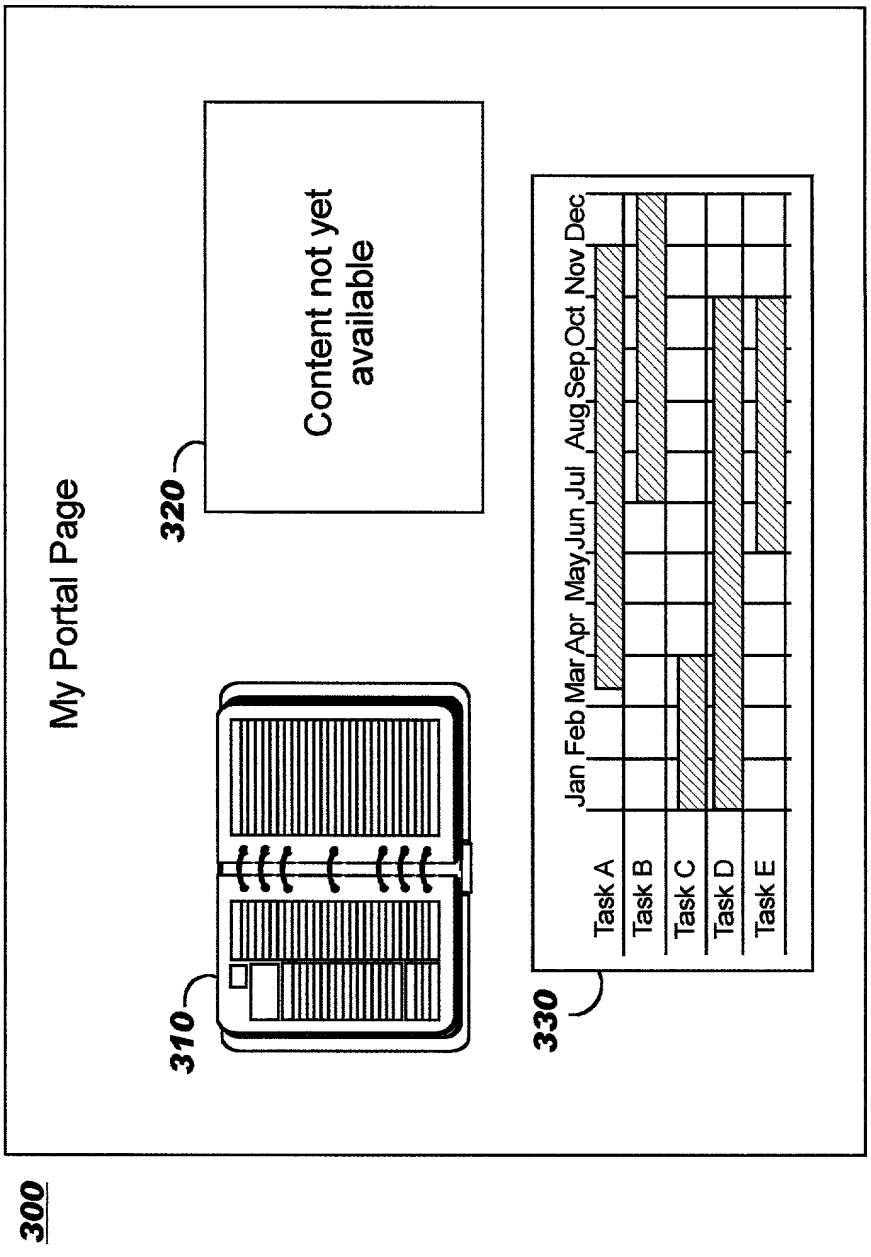

300
My Portal Page
310
320
Content not yet available
330
Task A
Task B
Task C
Task D
Task E
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

FIG. 3B

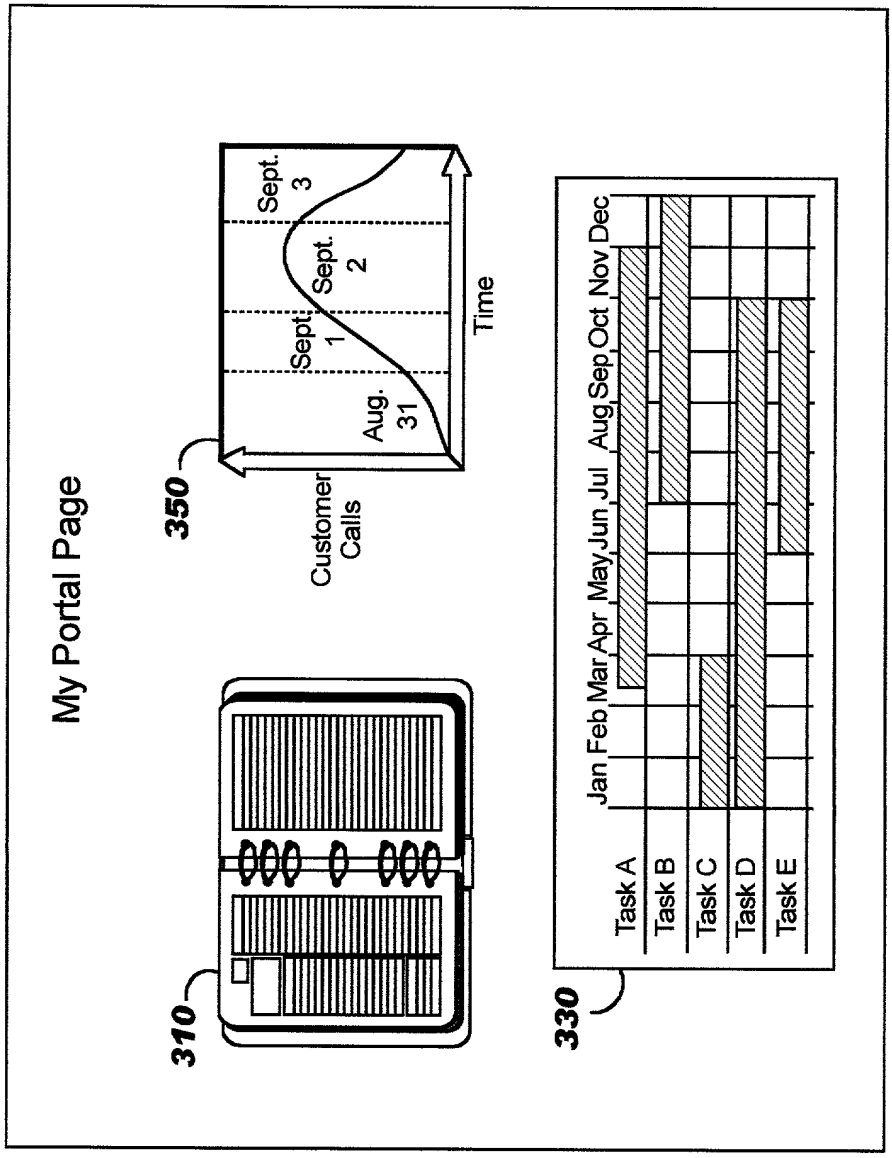

340
My Portal Page
310
350
Customer Calls
Aug. 31
Sept. 1
Sept. 2
Sept. 3
Time
330
Task A
Task B
Task C
Task D
Task E
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

FIG. 4

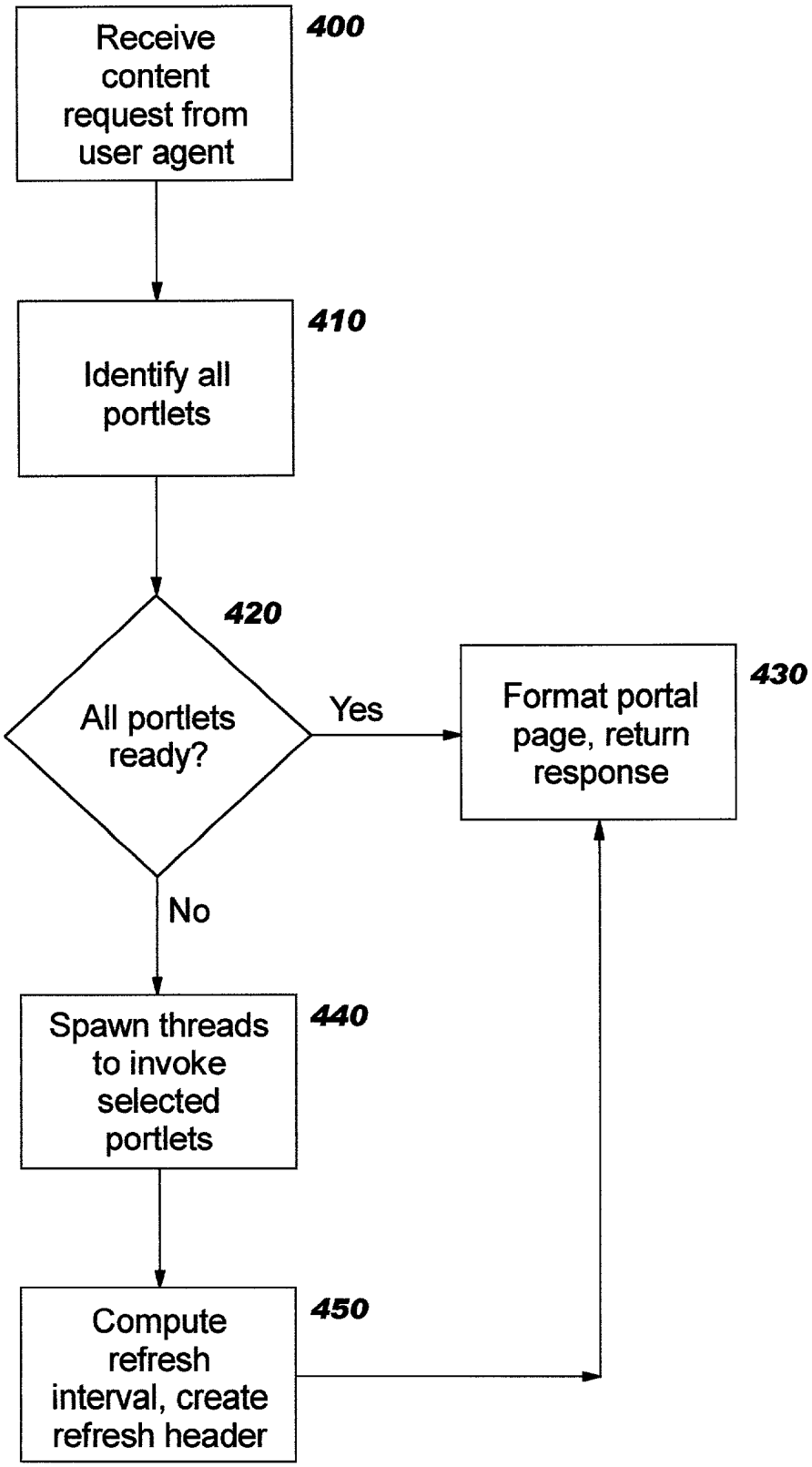

Receive content request from user agent
400
Identify all portlets
410
All portlets ready?
420
Yes
Format portal page, return response
430
No
Spawn threads to invoke selected portlets
440
Compute refresh interval, create refresh header
450

FIG. 5

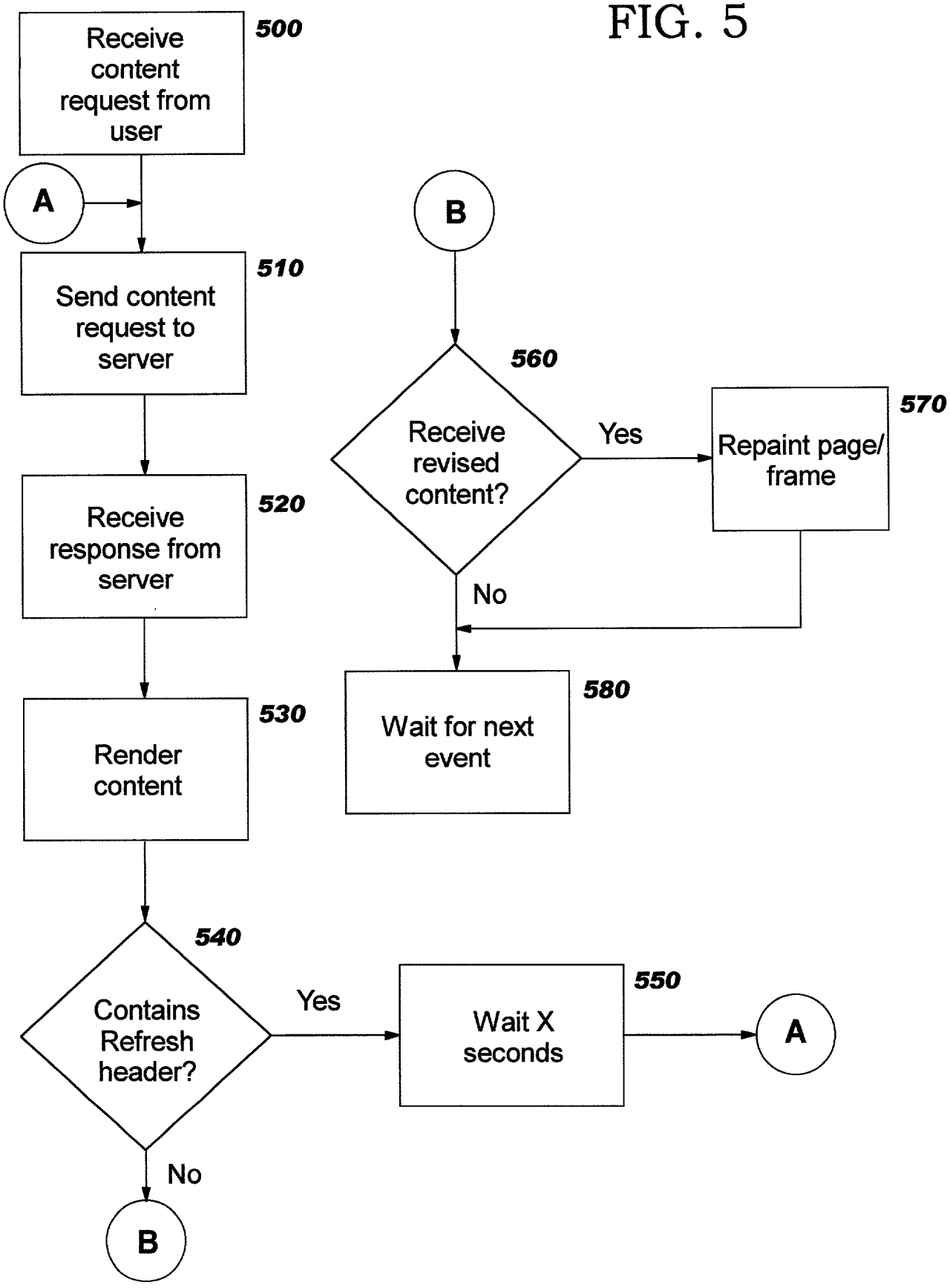

Receive content request from user
500
A
Send content request to server
510
Receive response from server
520
Render content
530
Contains Refresh header?
540
Yes
No
B
Wait X seconds
550
A
B
Receive revised content?
560
Yes
Repaint page/ frame
570
No
Wait for next event
580

FIG. 6A

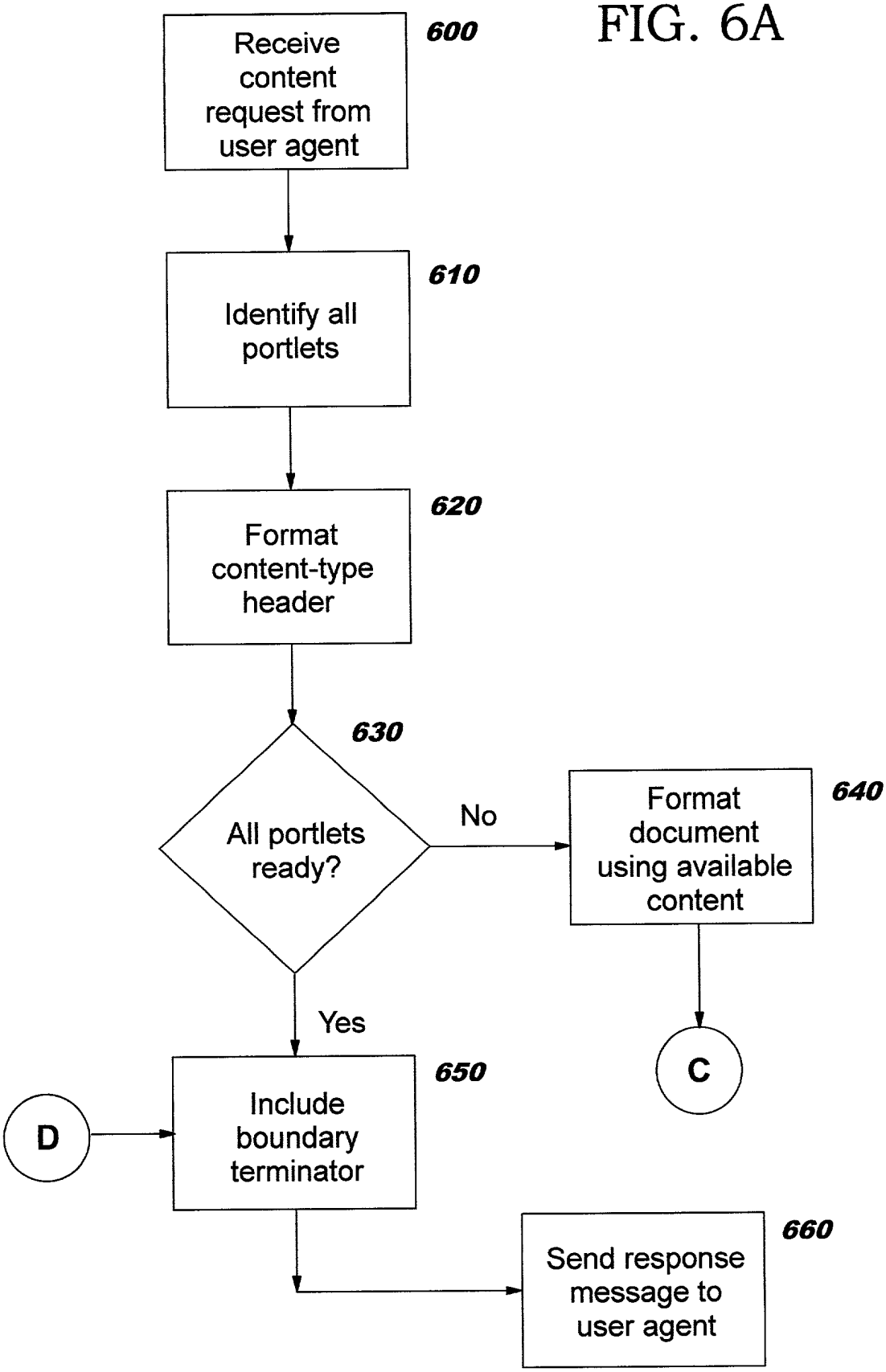
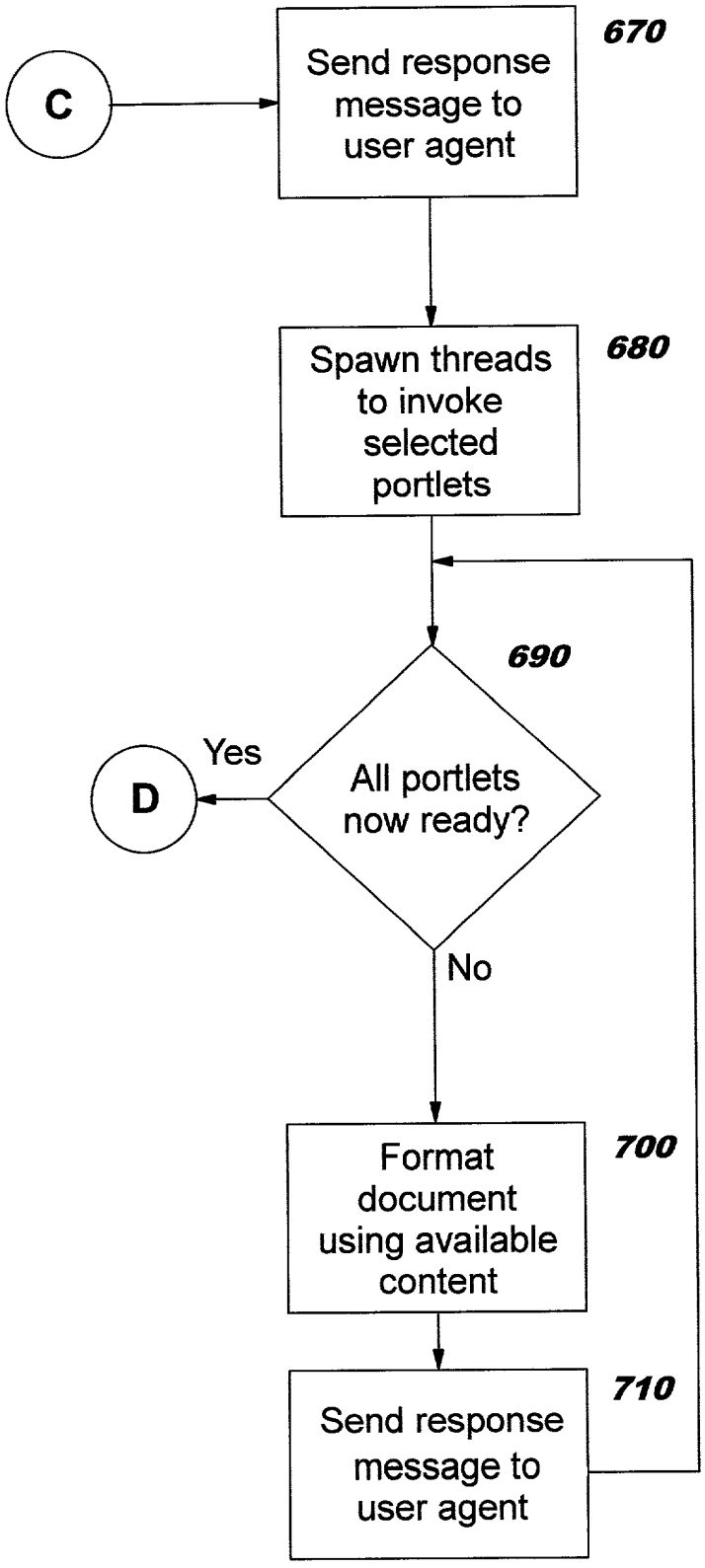

Receive content request from user agent
600
Identify all portlets
610
Format content-type header
620
All portlets ready?
630
No
Format document using available content
640
Yes
C
D
Include boundary terminator
650
Send response message to user agent
660

FIG. 6B


C
Send response message to user agent
670
Spawn threads to invoke selected portlets
680
690
All portlets now ready?
Yes
D
No
Format document using available content
700
Send response message to user agent
710